

Application Serial No. 10/512,125
Amendment Dated October 28, 2006
Reply to Office Action of June 28, 2006

Amendments to the Specification

Please replace the first full paragraph on page 3 of the specification with the following paragraph:

A good detailed description of the optical imaging component of a spectrograph is "The Optics of Spectroscopy: a Tutorial," by J. M. Lerner and A. Thevenon, which is incorporated herein by reference in its entirety. It is available on the World Wide Web at the site of the Jobin Yvon Horiba company at [jyhoriba.co.uk/jy/oos/oos1](http://www.jyhoriba.co.uk/jy/oos/oos1.htm) ~~http://www.jyhoriba.co.uk/jy/oos/oos1.htm~~. In a typical spectrograph, light enters through a slit and is dispersed by a grating or prism by an angle dependent on the wavelength. The slit is imaged in the focal plane, and the image can be visualized as a rectangle with the long dimension which corresponds to wavelength determined by the dispersion (FIG. 1). The useful wavelength range of the spectrograph consists of a continuous distribution in wavelength between short and long wavelength limits λ_1 and λ_n . The other dimension is determined by the slit length, the imaging characteristics of the optics, and the required performance, since in practice, the wavelength separation is usually best in the middle and degrades as one goes towards the edges.

Please replace the first full paragraph on page 4 of the specification with the following paragraph:

For demanding applications, however, CCDs are often preferred over PDAs, since in CCDs the inherent electrical noise can be made much lower. A detailed description of a modern CCD used for spectroscopy can be found in the document "An Introduction to Scientific Imaging Charge-Coupled Devices" published by Scientific Imaging Technologies, Incorporated, which is incorporated herein by reference in its entirety and available on the World Wide Web at autovision.net/CCDs.pdf the

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~~address~~ ~~<http://www.autovision.net/CCDs.pdf>~~ or ~~<http://www.site-inc.com/pdf/introdat.pdf>~~ or [site-inc.com/pdf/introdat.pdf](http://www.site-inc.com/pdf/introdat.pdf). An example of such a CCD is the S7031-1007 device manufactured by the Hamamatsu Corporation of Japan (HAMAMATSU PHOTONICS K.K., Solid State Division; 1126-1 Ichino-cho, Hamamatsu City, 435-8558 Japan, Telephone: (81) 053-434-3311, Fax: (81) 053-434-5184, <http://www.hamamatsu.com>; U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P.O. Box 6910, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (908) 231-0960. The total light sensing area of this device is 25.6 mm by 3.1 mm The total sensing area is nearly the same as that of the PDA referenced above, but, as is typical of CCDs, the individual pixels are small and square (24 microns on a side) and arranged in a two-dimensional array.